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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/521,253	Applicant(s) PRZADKA, ANDREAS	
	Examiner Eduardo A. Rodela	Art Unit 2826	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 June 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This Office Action is in response to the Request for Continued Examination received June 19, 2007.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 10, 17, 18, 22, 23, 25, 26, and 27 are rejected under 35 U.S.C. 102(b) as being anticipated by Ahn et al. (US 6,274,937).

Regarding Claim 1, Ahn shows in Figure 1, an electronic component comprising:

a multi-layer substrate [10] having an upper side and under side, the multi-layer substrate comprising at least one integrated impedance converter [106,110], the at least one integrated impedance converter comprising at least one inductor [106] and at least one capacitor [110] integrated in the multi-layer substrate [10], the at least one integrated impedance converter being configured to perform impedance conversion between different standard impedance levels [column 2: lines 7-22]; and

at least one chip component [120] comprising external contacts [portion of 142 contacting 150], the at least one chip component being disposed on the upper side of the multi-layer substrate [10], the at least one chip component [120] being electrically connected [150] to the at least one integrated impedance converter [150 connect to both 106,110].

Regarding Claim 2, Ahn shows the electronic component of claim 1. In addition, Ahn shows in Figure 1 wherein the external contacts [portion of 142 contacting 150] comprise surface mounted device contacts [flip chip orientation shown].

Regarding Claim 3, Ahn shows the electronic component of claim 1. In addition, Ahn shows in Figure 1 wherein the multi-layer substrate [10] comprises at least one passive circuit element of at least one active circuit element [108].

Regarding claim 10, Ahn discloses the electronic component of claim 1. In addition Ahn shows wherein the at least one discrete circuit element [108] disposed on the upper side of the multi-layer substrate [10], the at least one discrete circuit element comprising an active circuit element or a passive circuit element [column 6, lines 56-65].

Regarding claim 17, Ahn discloses the electronic component of claim 1. Ahn does disclose wherein the multi-layer substrate [10] comprises layers of silicon or silicon oxide [column 6, lines 31-45].

Regarding claim 18, Ahn discloses the electronic component of claim 1. Ahn does show wherein the multi-layer substrate [10] comprises one or more layers of an organic material [122, epoxy].

Regarding claim 22, Ahn disclose the electronic component of claim 10. In addition Ahn shows wherein the at least one chip component [120] and the at least one discrete circuit element [108] comprise surface mounted design elements [designed to operate at the surface of 10].

Regarding claim 23, Ahn disclose the electronic component of claim 1. In addition Ahn shows wherein the at least one chip component [120] comprises a housing [portion of 122 contacting surface of 120] comprising external contacts [138].

Regarding claim 25, Ahn disclose the electronic component of claim 1. In addition Ahn shows wherein the at least one chip component [120] is connected to the multi-layer substrate [10] via flip-chip technology [shown].

Regarding claim 26, Ahn shows in Figure 1, a method of producing an electronic component comprised of a multi-layer substrate [10] having an upper side and under side, the multi-layer substrate comprising at least one integrated impedance converter [106,110], the at least one integrated impedance converter comprising at least one inductor [106] and at least one capacitor [110] integrated in the multi-layer substrate [10], and at least one chip component [120] comprising external contacts [portions of 142 contacting 150], the method comprising:

installing the at least one chip component [120] in a housing [portion of 122 contacting 120]; and

mounting the housing onto the upper side of the multilayer substrate [10] so as to electrically connect the at least one chip component [120] to the integrated impedance converter [106,110], wherein the at least one integrated impedance converter is configured to perform impedance conversion between different standard impedance levels [column 2: lines 7-22]. It is noted that the recitation that "a method of producing an electronic component comprised of a multi-layer substrate having an upper side and under side, the multi-layer substrate comprising at least one integrated impedance

Art Unit: 2826

converter, the at least one integrated impedance converter comprising at least one inductor and at least one capacitor integrated in the multi-layer substrate, and at least one chip component comprising external contacts, the method comprising" has not been given patentable weight because it has been held that a preamble is denied the effect of a limitation where the claim following the preamble is a self-contained description of the structure not depending for completeness upon the introductory clause. *Kropa v. Robie*, 88 USPQ 478 (CCPA 1951).

Regarding claim 27, Ahn disclose the method of claim 26. In addition, Ahn shows comprising: mounting at least one discrete circuit element [108] on the upper side of the multi-layer substrate [10].

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over by Ahn et al. (US 6,274,937) in view of Chakravorty (US 6,970,362).

Regarding Claim 4, Ahn shows the electronic component of claim 1. Ahn does not specify wherein the at least one chip component comprises at least one filter circuit. Ahn does however discuss that, "the digital circuit elements 140 of the chips 120 form the required analog and digital circuitry for an analog / digital RF communication system." It is well known in the art that RF communication systems require at least

Art Unit: 2826

some filter circuits for basic operation. Chakravorty does disclose in Figure 2, a multilayer substrate [55] with a die [40], surface mounted on the upper surface, wherein the at least one chip component comprising at least one filter circuit [column 3, lines 60-67]. It would have been obvious to one of ordinary skill in the art at the time that the invention was made that the chip component of Ahn could have any sort of circuit therein such as a filter circuit of Chakravorty, in order to further provide functionality to the overall device such as a high frequency filter for a cell phone.

Claims 5, 11, 12, 13, 15, 19, 20, 21, and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ahn et al. (US 6,274,937) in view of Uchikoba (US 6,628,178).

Regarding claim 5, Ahn disclose the electronic component of claim 1. Ahn does not disclose wherein the at least one chip component comprises at least one resonator that operates with surface acoustic waves. Uchikoba does disclose in Figure 1, a multilayer substrate [40] with a die [30], surface mounted [face down with connections 31 and 43] on the upper surface of the substrate [40], wherein the at least one chip component [30] comprises at least one resonator that operates with surface acoustic waves [column 7, lines 19-34]. It would have been obvious to one of ordinary skill in the art at the time that the invention was made to use a surface mountable surface acoustic wave device of Uchikoba on the substrate of Ahn, in order to further provide components necessary for a high frequency filter.

Regarding claim 11, Ahn disclose the electronic component of claim 10. Ahn does not disclose wherein the at least one discrete circuit element comprises at least

Art Unit: 2826

one of the following: a high-frequency circuit, an adjustment circuit, an impedance converter, etc. Uchikoba does disclose in Figures 9-11, wherein the at least one discrete circuit element [15] comprises at least one of the following: an antenna circuit, a diplexer, a low pass filter, and a band pass filter [column 1, lines 52-67]. It would have been obvious to one of ordinary skill in the art at the time that the invention was made to use the discrete components of Uchikoba on the substrate of Ahn, in order to further provide components necessary for several types of circuits used in high frequency device applications.

Regarding claim 12, Ahn disclose the electronic component of claim 10. Ahn does not show wherein the at least one discrete circuit element comprises at least part of a high-frequency circuit, a duplexer or a diplexer, and wherein the at least one discrete circuit element assists in connecting the at least one chip component to an antenna. Uchikoba discloses in Figures 9-11, wherein the at least one discrete circuit element [15] comprises at least part of a diplexer [column 1, lines 52-67], and wherein the at least one discrete circuit element assists in connecting the at least one chip component to an antenna [column 1, lines 53-67]. It would have been obvious to one of ordinary skill in the art at the time that the invention was made to use the discrete components of Uchikoba on the substrate of Ahn, in order to further provide components necessary for several types of circuits used in high frequency device applications.

Regarding claim 13, Ahn disclose the electronic component of claim 1. Ahn do not disclose further comprising: at least one circuit element integrated in the multi-layer substrate; wherein the at least one circuit element comprises at least part of one of the

Art Unit: 2826

following: a high frequency circuit, an adjustment circuit, an antenna circuit, a diode circuit, etc. Uchikoba does disclose in Figures 9-11, a low pass filter, a band pass filter, a diplexer [column 1, lines 53-67]. It would have been obvious to one of ordinary skill in the art at the time that the invention was made to use the circuit components of Uchikoba on the substrate of Ahn, in order to further provide components necessary for several types of circuits used in high frequency device applications.

Regarding claim 15, Ahn disclose the electronic component of claim 1. Ahn does not show wherein the multi-layer substrate comprises a plurality of adjustment circuits. Uchikoba does disclose in Figures 9-11, wherein the multi-layer substrate [1] comprises a plurality of adjustment circuits [LPF,DPX,BPF]. It would have been obvious to one of ordinary skill in the art at the time that the invention was made to use the circuit components of Uchikoba on the substrate of Ahn, in order to further provide components necessary for several types of circuits used in high frequency device applications.

Regarding claim 19, Ahn discloses the electronic component of claim 1. Ahn does not specify wherein the at least one chip comprises at least one or more inputs and outputs; and wherein at least one input and/or at least one output of the at least one chip component conducts an asymmetrical signal. Uchikoba does disclose in Figures 9-11, wherein the at least one chip [15] comprises at least one or more inputs and outputs [inherently any operational device would]; and wherein at least one input and/or at least one output of the at least one chip component conducts an asymmetrical signal [components in the LPF and BPF would handle signals with a spectrum of frequencies].

It would have been obvious to one of ordinary skill in the art at the time that the invention was made to have the asymmetrical signal handling components of Uchikoba in the device of Ahn, in order to further provide components necessary for filter circuits.

Regarding claim 20, Ahn disclose the electronic component of claim 1. Ahn does not disclose wherein the at least one chip component comprises at least one or more inputs and outputs; and wherein at least one input and/or at least one output of the at least one chip component conducts a symmetrical signal. Uchikoba does disclose wherein the at least one chip component comprises at least one or more inputs and outputs [inherently any operational device would]; and wherein at least one input and/or at least one output of the at least one chip component conducts a symmetrical signal [Fig. 9: the receiving circuit would have a clock signal, which is symmetrical]. It would have been obvious to one of ordinary skill in the art at the time that the invention was made to have the symmetrical signal handling components of Uchikoba in the device of Ahn, in order to further provide components necessary for a receiver circuit.

Regarding claim 21, Ahn disclose the electronic component of claim 1. Ahn does not specify wherein the at least one chip component comprises a connection to ground, the connection to ground being made via an adjustment circuit that is at least partially integrally integrated in the multi-layer substrate; and wherein the adjustment circuit comprises at least one of a coil, a capacitor, and a conductor. Uchikoba does show in Figure 3 of which schematic components are all situated on the ceramic substrate, wherein the at least one chip component [downward facing diode] comprises a connection to ground [schematic ground], the connection to ground being made via an

Art Unit: 2826

adjustment circuit [parallel resistor and capacitor both connected to ground] that is at least partially integrally integrated in the multi-layer substrate [all schematic components are on the surface of the ceramic capacitor]; and wherein the adjustment circuit comprises a capacitor [capacitor in parallel with resistor both connected to ground] and a conductor. It would have been obvious to one of ordinary skill in the art at the time that the invention was made to have the components in the specified configuration of Uchikoba in the device of Ahn, in order to further provide the necessary connections to the complex circuits used in high frequency device applications.

Regarding claim 28, Ahn disclose the method of claim 27. Ahn does not show wherein the at least one chip component and the at least one discrete circuit element are attached to the upper side of the multi-layer substrate using a same attaching mechanism. Uchikoba does disclose in Figure 1, wherein the at least one chip component [30] and the at least one discrete circuit element [50] are attached to the upper side of the multi-layer substrate [40] using a same attaching mechanism [surface mount connection]. It would have been obvious to one of ordinary skill in the art at the time that the invention was made to have the components be mounted in the same surface mounting manner of Uchikoba in the device of Ahn, in order to simplify the manufacturing process and make the overall device more reliable since wire bonds are known to be quite fragile and subject to disconnection.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ahn et al. (US 6,274,937) in view of Ma et al. (US 6,673,697).

Regarding claim 6, Ahn disclose the electronic component of claim 1. Ahn does not show wherein at least one chip component comprises a resonator that operates with bulk acoustic waves. Ma et al. does show in Figure 1, wherein at least one chip component comprises a resonator [bulk film resonator 32] that operates with bulk acoustic waves and is surface mountable. It would have been obvious to one of ordinary skill in the art at the time that the invention was made to use a surface mountable bulk acoustic wave device of Ma on the substrate of Ahn, in order to further provide components necessary for a high frequency filter.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ahn et al. (US 6,274,937) in view of Li (US 6,713,860).

Regarding claim 7, Ahn disclose the electronic component of claim 1. Ahn does not disclose wherein the at least one chip component comprises a microwave ceramic filter. Li discloses in Figure 5, the use of a ceramic capacitor [506, column 13, lines 52-60] that is surface mounted on a multilayer substrate [502]. It would have been obvious to one of ordinary skill in the art at the time that the invention was made to (1) have a ceramic capacitor of Li in a microwave ceramic filter and (2) have a microwave ceramic filter on the substrate of Ahn, in order to provide components necessary for the operation of a microwave frequency ceramic filter.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ahn et al. (US 6,274,937) in view of Asahi et al. (US 6,955,948).

Regarding claim 8, Ahn disclose the electronic component of claim 1, and that it contains inductors, capacitors, and resistors [column 13, lines 55-65]. Ahn does not

Art Unit: 2826

specifically disclose a LC chip filter. Asahi et al. discloses the at least one chip component comprises an inductive-capacitive (LC) chip filter [column 9: lines 10-17]. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a LC filter in a high frequency circuit used in receiving and transmitting circuits. The ordinary artisan would have been motivated to use the LC filter in the invention of Ahn as suggested by Asahi to provide the necessary filtering, modulation, and various other signal shaping functions necessary to the task.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ahn et al. (US 6,274,937) in view of Figueroa et al. (US 6,388,207).

Regarding claim 9, Ahn disclose the electronic component of claim 1. Ahn does not show a stripline filter. Figueroa et al. discloses the at least one chip component comprises a stripline filter [capacitor used as signal filter to deliver improved signal integrity through the substrate to the semiconductor chips, disclosed in column 3: lines 24-34, column 4: lines 1-10, and column 6: lines 24-34]. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a stripline filter of Figueroa in the substrate of Ahn, in order to improve the signal quality being fed through the substrate to the supported electronic component.

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ahn et al. (US 6,274,937) in view of Uchikoba (US 6,628,178) in further view of Liu et al. (US 6,060,954).

Regarding claim 14, Ahn and Uchikoba disclose the electronic component of claim 13. Ahn and Uchikoba do not show wherein the at least part of an adjustment

Art Unit: 2826

circuit integrated in the multi-layer substrate is formed as one or more strip conductors on the upper side of the multi-layer substrate. Liu et al. do disclose in Figure 2B and 2F, wherein the at least part of an adjustment circuit [column 2, lines 40-45] integrated in the multi-layer substrate is formed as one or more strip conductors [101] on the upper side of the multi-layer substrate. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a stripline conductor of Liu on the upper surface of the substrate of Ahn and Uchikoba, in order to allow for the re-workability of the circuit and simplify the fabrication process with respect to the substrate, rather than burying the conductors, making vias, and bonding pads.

Claims 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ahn et al. (US 6,274,937) in view of Daniels et al. (US 6,642,811).

Regarding claim 16, Ahn disclose the electronic component of claim 1. Ahn does not show wherein the multi-layer substrate comprises ceramic layers. Daniels shows wherein a multi-layered impedance conversion substrate is in part of ceramic [column 2, lines 39-42]. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have made the substrate of ceramic as suggested by Daniels in the substrate of Ahn, for the purpose of using a material which is commonly known to be well suited to handling high temperature cycling with minimal physical deformation due to thermal expansion.

Claims 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ahn et al. (US 6,274,937) in view of Juskey et al. (US 6,356,453).

Regarding claim 29, Ahn disclose the method of claim 27. Ahn do not show wherein the at least one chip component and/or the at least one discrete circuit element is mechanically stabilized using a casting compound. Juskey et al. do disclose in Figure 5, wherein the at least one chip [522] component and/or the at least one discrete circuit element [536] is mechanically stabilized using a casting compound [536]. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a casting compound as taught by Juskey in the package of Ahn in order to provide a material which protects the electronic components from the ambient environment.

Fax / Telephone Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eduardo A. Rodela whose telephone number is (571) 272-8797. The examiner can normally be reached on M-F, 9:00AM-5:30PM.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sue Purvis can be reached on (571) 272-1236. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2826

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Eduardo A Rodela
Examiner
Art Unit 2826

E.A.R.


SUE A. PURVIS
SUPERVISORY PATENT EXAMINER